

Appl. No. 09/771,797  
Amdt. dated Aug. 13, 2003  
Reply to Office action of May 19, 2003

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

*B14*

Claim 1 (Currently amended): An optical backplane for an electronic system comprising a plurality of waveguide plates arranged in a stack, a number (n) plurality of circuit board assemblies mounted on the stack, redundant power distribution means for each circuit board assembly, the stack of waveguide plates having an aggregate number (w) a plurality of optically isolated transmittransmitting and receivereceiving waveguide paths, where  $(w) = ((n) \times (n-1)/(2))$ , each circuit board having a number (n-1) plurality of electro-optical interfaces in optical registry with transmittransmitting and receivereceiving paths whereby each circuit board assembly communicates with every other circuit board assembly in the system.

Claim 2 (Currently amended): An optical backplane for an electronic system comprising a plurality of waveguide plates arranged in a stack, a number (n) plurality of circuit board assemblies mounted on the stack, redundant power distribution means for each circuit board assembly, the stack of waveguide plates having an aggregate number (w) a plurality of optically isolated transmittransmitting and receivereceiving waveguide paths, where  $(w) = ((n) \times (n-1)/(2))$ , each circuit board having a number (n-1) plurality of electro-optical interfaces in optical registry with transmittransmitting and receivereceiving paths whereby each circuit board assembly is electrically isolated from every other circuit board assembly in the system.

Claim 3 (Previously presented): An optical backplane as defined in claim 2 in which the waveguide plates are circular to minimize the length of optical paths and thereby to minimize transmission delays.

{ Claim 4-5 (Canceled) }

Claim 6 (Currently amended): An optical backplane for an electronic system comprising a plurality of waveguide plates arranged in a stack, a number (n) plurality of circuit board assemblies mounted on the stack, redundant power distribution means for each circuit board assembly, the stack of waveguide plates having an aggregate number (w) a plurality of optically isolated transmittransmitting and receivereceiving waveguide paths, where  $(w) = ((n) \times (n-1)/(2))$ , each circuit board having a number (n-1) plurality of electro-optical interfaces in optical registry with transmittransmitting and receivereceiving paths whereby backplane surface area is minimized for optimum air cooling of the system.

{ Claim 7-10 (Canceled) }

Claim 11 (Currently amended): A waveguide plate having a surface for an optical interconnect backplane comprising a plurality of pairs of side-by-side optically isolated transmittransmitting and receivereceiving paths passing through the plate with the optical paths being optically accessible at spaced pairs of adjacent optically isolated receivereceiving and transmittransmitting ports at the surface of the plate.

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} Claim 12-13 (Canceled) }

Claim 14 (Currently amended): An optical backplane for an electronics system comprising a plurality of waveguide plates arranged in a stack, a ~~number (n)~~ plurality of circuit board assemblies mounted on the stack at spaced stations, ~~redundant~~ power distribution means for each circuit board assembly, the stack of waveguide plates having a ~~number (n/2) of (n-2)/2~~ pair plurality of plates of side-by-side optically isolated ~~transmit~~ transmitting and ~~receive~~ receiving paths passing through the [[body]] plate, and the paths being optically accessible at spaced pairs of adjacent optically isolated ~~receive~~ receiving and ~~transmit~~ transmitting ports at the stations on the plate; the stack of waveguide plates further having a number  $((n)/(2))$  of  $(n)/2$  pair of side-by-side optically isolated transmit and receive paths passing through the body, the paths being optically accessible at spaced pairs of adjacent optically isolated receive and transmit ports at the stations on the plate thereby providing an aggregate number  $((n) \times (n-1)/(2))$  of optically isolated transmit and receive waveguide paths, each circuit board having a ~~number (n-1)~~ plurality of electro-optical interfaces in optical registry with transmit and receive paths whereby each circuit board assembly communicates with every other circuit board assembly in the system.

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} Claim 15-17 (Canceled) }

Claim 18 (Currently amended): A waveguide plate for an optical backplane, the plate having a surface, the plate comprising at least one pair of side-by-side optically isolated ~~transmit~~ transmitting and ~~receive~~ receiving paths passing through the plate with the optical paths being optically accessible at spaced pairs of adjacent optically isolated ~~receive~~ receiving and ~~transmit~~ transmitting ports at the surface of the plate, the ~~receive~~ receiving and ~~transmit~~ transmitting ports being recesses defining positive locating means for an electro-optical interface and for receiving another set of waveguides to extend the optical paths directly onto a circuit board assembly.

} Claim 19-22 (Canceled) }